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ENVIRONMENTAL AUDITING

by

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It is a pleasure to be with you today to talk on the theme of environmental auditing in the context of waste management. I am going to start by trying to come to grips with defining this new activity that we call the environmental audit. When I have done that I am going to lead you on a quick audit of a local modern municipal landfill and, if time permits, I will wrap up by attempting to locate the environmental audit as a component of the new approach that we call sustainable development.

What is an environmental audit? There is even a difference of opinion among those selling the service. Perhaps that is understandable: environmental audits are the new product on the block. As so often happens with new products, the term means different things to different people.

If I wished to be cynical, which I most definitely am not, I would say that accountants have seen the word audit and said *ah ha - here is a new product for us to sell*; lawyers have heard that audits have something to do with compliance and have said *ah ha - here is a new product for us to sell*; and of course engineering consultants are always prepared to sell any service that includes the word "environment". In fact there may be a role for all of those specialties in environmental auditing, though I am sure that it will be no surprise to you that I am of the opinion that a real audit involves environmental and scientific specialists.

The dictionary defines audit as an "official examination of accounts". An environmental audit is an examination of the company's environmental accounts, the environmental debits and credits resulting from the business activity. Given that it is almost impossible to undertake any activity, including breathing, eating and walking, without having some environmental impact, an environmental audit would normally be heavy on debits. Fortunately, for those of us who want to look on the positive side of the ledger, the audit looks at environmental debits and credits not against a bottom line of zero but against a bottom line that is set according to the purpose of the audit. Here is where the confusion arises.

With the increasing concern of directors and officers that they may be held personally liable for the environmental transgressions of their company, one of the most common audits is to determine the compliance of the company with environmental legislation and regulations. Few large companies are free of some kind of violation, sometimes because staff are not adequately trained in current regulatory requirements, sometimes because

managers are scared that they will be fired if they admit the existence of environmental problems, sometimes because people are too proud to admit that they made a mistake and caused an environmental problem. Most often, violations arise through simple carelessness. The environmental liability audit, carried out by outside experts to determine the state of the company's compliance with the law, is almost certainly the best way for directors and CEO's to demonstrate that they are taking their environmental responsibility seriously and thus to minimize their personal liability in the event that government inspectors lay charges. Of course, the audit alone is not enough: the company must be prepared to deal with any problems revealed by the audit in an efficient and effective manner. I might also add as a footnote that I am somewhat disappointed that some companies are treating compliance audits as if they were a major environmental leadership step. Compliance audits simply ensure that the company is complying with the law and I think we should expect compliance with the law from every company that does business in this province.

A couple of years ago there was a great deal of concern in business that compliance audits should not be undertaken because the Ministry of the Environment might seize the results and use them in court against you. The concern has diminished today, but in case anyone is thinking of it, perhaps I should address it. First, my legal friends say that Ministry enforcement officers are very unlikely to seize an audit report. Second, they tell me that the courts are very unlikely to accept it. Third, if you're going to get prosecuted it's a whole lot better if the President knows ahead of time that he's got a problem and that someone is working on it! Bluntly, driving a corporation without knowing whether or not the company is in compliance with environmental laws is substantially worse than driving a car without a speedometer. It won't stop you getting caught and not only is it not an excuse for the violation but it also shows a degree of wanton disregard that may well be used against you when it comes time for sentencing. Unless the CEO knows what's going on, he is much more vulnerable when something blows.

A variation of the liability audit arises when property or business ownership is transferred. Today any prospective new owner should want to ensure that they are not buying any environmental headaches. Audits of past practices are often negotiated as a component of transfer agreements whenever there is concern that the company's toxic wastes may lie buried somewhere.

At the other end of the spectrum is the "green" audit, sometimes called the "green comb". These are usually fairly quick reviews by experienced environmentalists who may not be experts in the company's area of business. The green audit is intended to provide the basis for a corporate "greening" program: adoption by the company of environmental initiatives with which it can impress environmentally conscious consumers. These audits generally look for waste reduction and recycling opportunities, energy conservation measures, and blatant cases of uncontrolled pollution. Following the audit the consultant

and a lot of good feeling that the company really cares about the environment.

Specialty environmental audits are also offered. Two of the most common are waste audits and energy audits. A waste audit is a detailed analysis of a company's wastes intended to find ways of reducing or eliminating discharges from industrial processes. These can be done by outside consultants or by the company's own staff: an excellent industrial waste audit manual, written as a how-to guide and illustrated with case studies, is published by the Ontario Waste Management Corporation. Energy audits are similar, but are designed to seek out ways of reducing the energy used by industrial or commercial activities. Again consultants are available, but funding and audit services are often available through provincial or municipal utilities.

Probably the best kind of audit from my perspective is that which is designed to help the company become an environmental leader in its field. These audits, often carried out by a team of experts covering the disciplines involved in the company's activities, review the company's activities against standards loosely defined as Best Available Technology Economically Achievable (BATEA). As a fully comprehensive audit approach, the leadership audit should include all aspects of other environmental audit types and, with the included development of an action program, it will almost certainly be an ongoing multi-year program for any large company. With government's slowly adopting BATEA standards as the measure for discharges of all types, the company that wants to get ahead and stay ahead needs this type of audit.

One particularly interesting type of audit is the solid waste audit. If any kind of company or institution wants to get a handle on its solid waste, an audit is almost essential. Certainly those who seek to comply with the National Packaging Protocol or the Ontario Minister's target for waste reduction will find a solid waste audit most useful.

In a solid waste audit, garbage that would normally leave your premises and go to landfill is collected instead by the firm of consultants who are undertaking the audit. In their warehouse the garbage is sorted and analyzed. By identifying the precise types and sources of waste present the consultants and the client are able to draw up a waste reduction plan that can achieve maximum results at minimum cost.

In one particular case that I am aware of, the audit discovered that over 30% of single serving packages of such items as ketchup and creamer were being thrown away by patrons of a fast food restaurant without even being opened. By asking patrons whether they would like ketchup or creamer, the operator was able to provide the impression of more caring service, substantially reduce costs, and reduce garbage at the same time. That is just one example of many where waste reduction opportunities discovered by a waste audit have proven especially cost effective.

Garbage has become the focus around which much of our environmental activity is

currently focused and I want to spend a little bit of time imagining the audit of a landfill site. Audits typically look at outputs, in the form of products, air and water emissions, and solid and liquid wastes. They also look at raw materials - the environmental impact of the things that are brought in to the plant. Often, "balance sheets" are used to determine the net environmental impact of some aspect of the plant operation.

Let us imagine a modern landfill site. A fairly straightforward audit. Products: none. Air emissions: burned for energy recovery. We can audit the landfill gas recovery system as a separate item - for now I just want to look at the site. Odour - very little if the site is well-managed. Vermin - a little trouble with gulls, but the environment won't die from gulls. Liquid waste - well, there is the leachate, but if our leachate collection system is effective, most of the leachate is being handled in an environmentally secure way. The leachate which escapes may be contaminating groundwater and we should certainly do everything we can to minimize that. Solid waste - none, except for blowing litter and dust, and proper management can control those. Land use - well, the site can hardly be said to be making good use of land, but shortage of land, except for high quality agricultural land, is not yet one of Canada's most pressing environmental issues. Contamination - the site is certainly contaminated, but today everyone knows that and no one expects to use the site for other purposes. What about the raw materials, the inputs to the facility - unfortunately, the raw materials are, well, garbage.

My point is that landfill sites themselves, properly run properly engineered and sited landfills, are not much of an environmental problem and I think an audit of a modern site would show that. Bluntly, we could go on landfilling Ontario's municipal solid waste for at least another 25 years and the impact on the physical environment of those landfills would be extremely minor when compared to many of the other environmental problems we face. However, when we look at the raw materials for landfill operation we see the real problem - not the landfill, but the garbage. The audit forces us to look at the inputs to the landfill operation and as soon as we do that we see where the real environmental problem lies.

Garbage is an environmental problem because of the resources, the raw materials and the energy that went into manufacture of the stuff that we are throwing away. Let me give some examples: we can reverse the decline of our forests if we stop throwing away so much wood and paper. We can extend the life of our affordable oil reserves if we stop throwing away so many manufactured products. We can reduce our consumption of fossil fuels, and help slow global warming, if we make certain products reusable instead of disposable, because frequently less energy is needed to reuse than to manufacture from raw materials. We also have to consider the manufacturing wastes, including air and water pollution, that are associated with production of all the stuff that we are throwing away. There is almost always less energy required and less pollution created when you manufacture a product out of recycled material than when you manufacture the same product out of virgin raw materials. Recycling and waste reduction programs do much

more than extend the life of landfills: they reduce pollution, acid rain, industrial waste, and climate change and help conserve resources as well.

Disposal of garbage is not the problem. The fact that garbage exists at all is the real problem. By the way, that's why many environmentalists do not see incinerators as a solution. They don't deal with the real environmental problem.

I am sure you are all aware that the Canadian Council of Ministers of the Environment has called for a 50% reduction in waste going to disposal by the year 2000. Interpretations of disposal vary somewhat across the country, but here in Ontario the Minister has clearly included both landfill and incineration as forms of disposal which are to be reduced. Measurement of these reduction targets is still up in the air, but I think it is reasonable to predict that the quantity of waste that we will be allowed to send to disposal will drop significantly within the next five years. Whatever target we choose to set for ourselves, carrying out an environmental audit can help us establish our environmental action plan.

One of the approaches to environmental auditing involves product life cycle analysis: studying the environmental impact of a product literally from cradle to grave. I think time permits me to illustrate the application of scientific and technical principles such as measurement to environmental audits by referring to a couple of examples of life cycle analysis with which we are currently involved.

The first example I want to use is the toothpaste package. Actually we are not researching this product, but because I have to protect proprietary information I have chosen a product for this morning's talk for which the issues are almost identical to the product on which we are doing research.

I am comparing two 100ml containers of toothpaste. One is a pump style dispenser, the other is a conventional tube. The pump is bigger. The traditional theory would suggest that the bigger container is worse for the environment, but when we actually conduct a life cycle analysis we get a different answer. Both packages contain 100ml of toothpaste but when we do tests of these two products in real life family use we find that the pump lasts twice as long as the tube. Why? First, the bead size is smaller, by about 30%. People use toothpaste by length, not by total volume and not by weight. A smaller bead size means that less product is used. Second, the pump provides better control. No toothpaste squirted on the mirror or dripping off the ends of the brush. Just enough to coat the brush and no more.

The pump and its package contain about 50% more material than the tube and its box, yet it lasts twice as long. People are still getting adequate toothpaste, especially as many dentists seem to agree that you don't really need toothpaste at all. Perhaps the pump, which at first glance seemed bad for the environment, is in fact the environmentally

preferred container, all because of dispensing efficiency.

Alternatively, perhaps we can take what we have learned about dispensing control and bead size from the pump to the tube and use the life cycle analysis results to develop an even more environmentally preferred tube type container.

Now that I have got into it, I cannot leave this subject of product life cycle analysis without talking about another of my favourites - disposable versus cloth diapers. Many of you may know that I have been up to my ass in this issue for the last couple of years. Let us look at the life cycle data.

Disposable diapers consume seven times as much raw materials as cloth diapers and produce ninety times as much solid waste. These figures are adjusted for the diaper life of an average baby - you cannot compare diaper for diaper because you generally use more disposables than cloth each day. So we compare of the total diaper life of the baby and we take into account that cloth diapers do wear out. But once you get away from raw materials and garbage you get some comparisons where disposables are less damaging to the environment. Cloth produces more process solid waste, uses about three and a half times as much energy, uses six times as much water, produces ten times as much water pollution, and nine times as much air pollution. All that, and the particular study I referenced for these figures ignores soil depletion caused by cotton crops, water pollution caused by pesticides used on the cotton, and it has a hard time quantifying a wide range of social issues such as providing freedom for women to work and allowing single parent families to obtain full time employment.

I am not going to draw any conclusions about cloth versus disposable diapers. I don't know how to compare water pollution with post consumer waste or air pollution with raw material consumption. Neither does anyone else, though a few brave economists are making a stab at using economic models to compare such diverse environmental issues. I think that generally we have to encourage people to make their own judgements. In areas of the country where water is short, I suspect that disposables do less harm to the environment. In areas where water is plentiful but landfill sites are in short supply, perhaps cloth wins. If disposable diapers were recyclable or compostable the balance would certainly tip much more in their favour.

I have related these two examples to illustrate the complexity of the situation when making environmental decisions, but I also want to emphasize that the issues are not complex when you have the information. You can understand about the toothpaste and the diapers. It is just a matter of knowing the questions to ask and making sure that you get credible answers. The list of issues can be much longer than in my diaper example. Often when conducting environmental audits we have to look at greenhouse gas emissions, ozone destroying substances, toxic wastes, rainforest impacts, pesticide use in raw material production, and much more. But it is still just a matter of asking the

questions and getting the answers.

The United Nations' World Commission on Environment and Development, the Brundtland Commission, gave us the definition of what it described as **sustainable development:**

> **Development which meets the needs of the present without compromising the ability of future generations to meet their own needs.**

Analysis of the Commission's report can help us understand that the concept includes such common sense ideas as:

- **Pollution is expensive, prevention is much cheaper;**
- **Solving environmental problems requires a healthy economy;**
- **A healthy economy requires a healthy environment; and**
- **Solving environmental problems after they have arisen is more expensive than preventing them before they arise.**

The environmental audit can show us where we are causing pollution and wasting money. It can show us the most cost effective pathways to reduce pollution and resource consumption. Because many waste reduction opportunities are tremendously cost effective, and will be increasingly so in the future, an environmental audit can help keep our business or organization economically healthy and implementing the action plan that should be an essential part of every audit will improve the health of the environment as well. For those interested primarily in compliance, having conducted and implemented the results of an audit before the inspectors come calling will go a long way to helping keep you out of jail.

The environmental audit may be the first phase of environment-economy integration as foreseen by the Brundtland concept of sustainable development. Ultimately, environmental audits will be required in order to provide shareholders with environmental information about their companies. Even today an audit is one excellent way through which CEO's and directors can remind themselves that they are as much responsible for the environmental performance of the company as they are for its economic performance.